Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1 through 20 (Cancelled).

21. (Currently amended) A multi stage selective catalytic cracking process, for producing high yield of middle distillate products having carbon atoms in the range of about C_8 to C_{24} from heavy hydrocarbon feed stocks in the absence of added hydrogen, said process comprising the steps of:

i) contacting preheated feed stock with a mixed catalyst in a first riser reactor under catalytic cracking conditions including catalyst to oil ratio of about 2 to 8, WHSV of about 150-350 hr^{-1}, contact period of about 1 to 8 seconds and top temperature in the range of about 400°C to 500°C, to obtain first cracked hydrocarbon products;

ii) separating the first cracked hydrocarbon products from the first riser reactor into a first fraction comprising hydrocarbons with boiling points less than or equal to about 370°C and a second fraction comprising hydrocarbons with boiling points greater than or equal to about 370°C, comprising unconverted hydrocarbons;

iii) cracking the second fraction from the first riser reactor comprising hydrocarbons having boiling points greater than or equal to about 370°C, in the presence of regenerated catalyst, in a second riser reactor operating under catalytic cracking conditions including WHSV of about 75-275 hr^{-1}, catalyst to oil ratio of about 4-12 and riser top temperature of about 425-525°C to obtain second cracked hydrocarbon products;

iv) separating the catalytically cracked products from the second riser reactor along with the cracked products comprising hydrocarbons having boiling

points less than or equal to about 370°C, from the first riser reactor to yield cracked products comprising dry gas, LPG, gasoline, middle distillates, heavy cycle oil and slurry oil; and

v) recycling substantially the entire heavy cycle oil comprising hydrocarbons having boiling points in the range of about 370°C to 450°C and at least part of the slurry oil having boiling points greater than or equal to 450°C, into the second riser reactor at a vertically displaced position lower than the position of introduction of the main feed, comprising bottom unconverted hydrocarbon fraction having boiling points greater than or equal to about 370°C, from the first riser reactor to obtain middle distillate products comprising hydrocarbons having carbon atoms in the range of C_8 – C_{24} in a proportion of about 50 to 65 wt % of the feed stock[[,]].

22. (Currently amended) A process as claimed in claim 21 wherein[[,]] the feed stock is at least one petroleum based heavy feed stock selected from the group consisting of vacuum gas oil (VGO), visbreaker/cooker heavy gas oil, cooker fuel oil and hydrocracker bottom.

23. (Previously presented) A process as claimed in claim 21 wherein the feed stock is preheated to a temperature of about 150-350°C and then injected into a pneumatic flow riser type cracking reactor.

24. (Currently amended) A process as claimed in claim 21 further comprising mixing spent [[catalyst is]] catalyst with [[the]] regenerated catalyst [[to form the mixed catalyst]] and charging the mixed catalyst, with a coke content of about 0.2 to 0.8 wt% of catalyst, to the bottom of the first riser at a temperature of about 450 - 575°C.

25. (Previously presented) A process as claimed in claim 21 wherein the cracked hydrocarbon vapor products from the first and second risers are separated from their respective spent catalysts under conditions sufficient to minimize over cracking of middle distillate range products into lighter hydrocarbons.

26. (Previously presented) A process as claimed in claim 21 wherein the spent catalysts from the first and second riser reactors are passed through respective dedicated catalyst strippers under conditions sufficient to render the catalysts substantially free from entrained hydrocarbons.

27. (Cancelled).

28. (Cancelled).

29. (Previously presented) A process as claimed in claim 21 wherein the catalytic cracking conditions in the first reactor, including feeding mixed regenerated catalyst, result in very high selectivity of middle distillate range products and conversion of hydrocarbon products of boiling point less than or equal to about 370°C at lower than about 50 wt% of the fresh feed.

30. (Previously presented) A process as claimed in claim 21 wherein the catalyst comprises a mixture of ReUSY zeolite based catalyst, having fresh surface area of 110-180 m^2/gm., pore volume of 0.25-0.38 cc/gm and average particle size of 60-70 microns, with selective acidic bottom upgrading components in the range of about 0-10 wt%.

31. (Currently amended) A process as claimed in claim 21 wherein [[the]] unconverted heavy hydrocarbon fraction from the second riser that is recycled into the second riser comprises about 0-50 wt% of the main feed to the second riser.

32. (Previously presented) A process as claimed in claim 21 wherein the amount of steam used for feed dispersion and atomization, and catalyst lifting at the riser bottom in the first and the second riser reactors is about 1-20 wt% of the respective total hydrocarbon feed.

33. (Currently amended) A process as claimed in claim 21 wherein the spent catalyst resides in [[the]] a stripper for a period of up to about 30 seconds.

34. (Currently amended) A process as claimed in claim 21 wherein [[the]] regenerated catalyst fed to the bottom of [[the]] a riser reactor has about 0.1-0.3 wt% coke, has a temperature of about 600-750°C and is lifted by catalytically inert gases.

35. (Cancelled).

36. (Cancelled).

37. (Currently amended) A process as claimed in claim 21 wherein [[the]] a Total Cycle Oil (TCO) comprises a mixture of heavy naphtha hydrocarbons having boiling points of about 150°C to 2.16°C and light cycle oil hydrocarbons having boiling points of about 216°C to 370°C.

38. (Previously presented) A fluidized bed catalytic cracking system, for the production of high yield of middle distillate products comprising hydrocarbons having carbon atoms in the range of C_8 to C_{24} from heavy petroleum feeds, comprising:

A. at least two riser reactors (1 and 2) means to introduce a fresh feed into the first riser reactor (1);

B. mean at the end of the first riser reactor (1), to quickly separate the spent catalyst from hydrocarbon product vapors;

C. means to steam strip said spent catalyst under conditions sufficient to remove entrained hydrocarbons;

D. first conduit means (5), adapted to:

feed a part of the said stripped catalyst into a regenerating apparatus (7), and feed another part of the stripped catalyst into a mixing vessel (10);

E. second conduit means (19) adapted to feed mixed catalyst to a point proximate to the bottom of the first riser reactor (1)

F. third conduit means (12) adapted to feed hydrocarbon product vapors separated from the catalyst evolved from said first riser reactor to a distillation column (13);

G. means to separate first cracked hydrocarbon products into a first fraction comprising hydrocarbons having boiling points not greater than about 370°C and a second fraction comprising hydrocarbons with boiling points not less than about 370°C, including uncracked feed fractions;

H. fed nozzle means (16) to feed said second fraction, comprising uncracked hydrocarbon products, into the bottom of said second riser reactor (2) at a point above the regenerated catalyst entry zone;

I. means to feed regenerated catalyst from the regenerating apparatus (7) to the bottom of the second riser reactor (2) through a conduit (9);

J. means to separate the hydrocarbon products of the second riser reactor (2) from the spent catalyst;

K. means to separate the cracked products of the second riser reactor (2), along with the products of the first fraction of the first riser reactor (1) comprising hydrocarbons with boiling points not greater than about 370°C into fractions comprising dry gas, LPG, gasoline, heavy naphtha, light cycle oil, heavy cycle oil, and slurry oil;.

L. means, including a separate feed nozzle (17) located at a point lower than the position of introduction of main feed, to recycle substantially all of the heavy cycle oil and at least part of the slurry oil, comprising hydrocarbons with boiling points of at least about 370°C, to said second riser reactor (2);

M. means to pass the feed and cracked product vapors together with said catalyst, into the second riser;

N. means to separate spent catalyst from product vapors of the second riser reactor (2);

0. means to strip entrained hydrocarbons from spent catalyst;

P. means to conduct stripped catalyst through a conduit (18) into the regenerating apparatus (7);

Q. means to regenerate said stripped catalyst and to produce a hot regenerated catalyst;

R. means to separate said hot regenerated catalyst into two parts, means to pass one part of said hot regenerated catalyst to the mixing vessel (10) through a conduit (8) and means to pass the other part of said hot regenerated catalyst directly to the bottom of the second riser reactor (2);

S. means to pass the mixed catalyst from the mixing vessel (10) through a conduit (19) to the inlet of the first riser reactor (1);

T. means to control:

the catalyst bed level in said stripping means, the catalyst circulation rate from the common regenerator, and

the quantity of the spent and regenerated catalyst entering into the mixing vessel (10) using slide valves placed in said conduits; and

thereby producing a high yield of middle distillate products.

39. (Currently amended) A system as claimed in claim 38 [[wherein the]] which further comprises a separating device which includes at least one cyclone separator.

40. (Previously presented) A system as claimed in claim 38 further comprising means to maintain the pressure in the first and second riser reactors in the range of about 1.0 to 4.0 $kg/cm^2(g)$.

41. (Currently amended) [[The]] A process as claimed in claim 21 further comprising:

(vi) recycling the fraction of unconverted hydrocarbons with boiling points greater than or equal to 3 70°C, obtained in step (iv) in additional riser reactors by repeating steps (iii) to (iv) to obtain additional middle distillate products.

42. (New) A process as claimed in Claim 24 wherein a portion of the spent catalyst from a first stripper and a full portion of the spent catalyst from a second stripper is regenerated in a turbulent or fast fluidized bed regenerator in the presence of air or oxygen containing gases at a temperature in the range of about 600°C to 750°C to obtain the regenerated catalyst with a coke content of less than 0.4 wt%.

43. (New) A process as claimed in claim 42, wherein the catalyst is continuously circulated through standpipe and slide values between the fluidized bed riser reactors, strippers and common regenerator.

44. (New) A process as claimed in claim 37, wherein a combined TCO (150 - 370°C) product, which comprises a mixture of heavy naphtha (150 - 216°C) and light cycle oil (216 - 370°C) has a higher cetane number than that from distillate produced in an FCC unit operated in a conventional distillate mode, and has a specific gravity, viscosity and pour point that are in a same range as that of a distillate produced by a conventional FCC unit operating in a distillate mode.

45. (New) A process as claimed in claim 37, which produces a combined TCO product having substantially the same properties, except for a hither cetane number, as that of a TCO obtained from a conventional FCC unit operating in a distillate mode, by:

a) changing a cut point of the TCO from the first riser to 120 - 370°C,

b) processing a 370°C + position of the first riser product in the second riser, and

c) changing a cut point of the TCO from the second riser to 120 - 390°C.

46. (New) A process as claimed in claim 21 wherein the mixed catalyst comprises spent catalyst and regenerated catalyst and has a coke content of about 0.2 to 0.8 wt% of catalyst.